$22^h\,35^m$. IV is about one-half the diameter of Satellite I in size, and about one-half as bright as that satellite. It is still ashy in color, and is apparently a little brighter than the reddish equatorial belt, on which it appeared so black.

While these observations were going on, a telephone message was received at the Observatory, from Mr. C. B. Hill, at the Chabot Observatory, kindly calling attention to the phenomenon. E. E. B.

MT. HAMILTON, August 15, 1890.

SOME PHOTOGRAPHIC EXPERIMENTS WITH THE GREAT TELESCOPE.

A plate was exposed, on August 4, on the multiple star *Epsilon Lyræ* which is composed of the two pairs *4 Lyræ* (magnitudes 4.6 and 6.3, distance 3″.1) and *5 Lyræ* (mags. 4.9 and 5.2, distance 2″.4) with the full aperture, and with exposures of $0^s.13$, 1^s, 2^s, 4^s, 8^s and 16^s. *Alpha Lyræ* (first magnitude) was similarly exposed on the same plate (Seed 26). Four other stars show also; namely,

w,	D M. 38°, 3229,	magnitude 7.3
x,	D M. 39°, 3505,	" 6.5
y,	D M. 38°, 3237,	" 7.8
z,	D M. 39°, 3514,	" 8.5

Some of the results from this plate may have more than a special interest, as they will show what is to be expected (and what is *not* to be expected)* from a photographic lens with the unusual relation of aperture (33 inches) to focus (570.2 inches) of 1 to 17. In such a lens 1″ of arc is about 0.0028 inches, and two stars at a distance of 3″, or even less, should show on a plate which has had the proper exposure. In fact the 1^s exposure gives very good and perfectly well-measurable images of all the stars down to magnitude 7. The probable error of a measure of the distance of the close doubles *4* and *5 Lyræ* is not above 0″.02 or 0″.03.

The diameters of the star discs are — approximately only — for

a star of	4.6	mag., exposed	1^s,	diameter	=	1″.3
"	4.9	" "	1	"	=	1 .9
"	5.2	" "	1	"	=	1 .2
"	6.3	" "	1	"	=	1 .1
"	6.5	" "	1	"	=	0 .7
"	7.3	" "	1	"	=	1 .3
"	7.8	" "	4	"	=	1 .5
"	8.5	" "	8	"	=	1 .2
"	8.5	" "	16	"	=	1 .5
"	8.5	" "	4 is just measurable for position.			

* "Jedes Fernrohr hat seinen Himmel."

It is evident from these figures that the stars are not all of the same color.

In the earlier reports on the Paris photographic telescope ($a = 13$ inches, $f = 13$ feet) it was stated that an exposure of 60^s gave all the stars of the D M. (magnitudes $1-9.5$). Since the very sensitive American plates have been introduced, it is probable that even less exposure is required. In the last report of the Potsdam Observatory, it is said that in 15 seconds, stars of the 9.5 magnitude are "*angedeutet*," which I understand to mean are just plainly visible, but probably not easily measurable.

From what precedes, it is clear that double-stars which are fairly bright, whose components are at the same time fairly equal in magnitude, and whose distance is not less than $2''$ or $3''$, can be quickly photographed and easily and accurately measured, provided the scale of the plate is known. Ten or twelve exposures can be made in five minutes, after the telescope is once pointed. The accidental error of a single measure is small. The constant error cannot be large. The subsequent measures on the plate can be very readily made with the extremely convenient measuring-engine of the Observatory. It would seem, then, that there is a whole class of double stars which is suitable for photographic observation with our long-focused telescope. The very close stars and the very unequal stars must always be observed visually.

The Parallax of Nebulæ.

If in photographing a nebula, like that in *Lyra* or STRUVE 6, for example, we give a long exposure, the result is a picture of the object which resembles the visual image very closely. If the original exposure is halved, the nebula covers a smaller area. If the exposure is halved again, the nebula becomes still smaller. By suitably diminishing the exposure-time the nebula may be made to appear very much like a ninth or tenth magnitude star, and in such a case it is perfectly easy to make measures of its position which are very accurate—as accurate as those on stars.

It appears, from actual experiment, that by adopting the very simple device of suitably reducing the exposure-time, a nebula may be made to give an image upon which perfectly precise measures of position can be made. I see no reason why a series of such negatives, all made with exactly the same exposure-times, continued throughout a year, should not be suitable for the determination of the parallax. E. S. H.